

Centerville-Abington Elementary Curriculum Mapping
Science – Grade 4
 1st Nine Weeks
 Diane Luken

Units Chapter Lesson	Indiana Standards	Key Questions	Resources/Activities	Vocabulary	Assessments
Part One: The Nature of Science Lesson One (2 Sessions)	SEPS.1 Posing questions for science and defining problems for engineering	What is science? What questions do scientists ask?	Teacher's Manual, pages 296-307 Leveled Readers	Inquiry Investigation	"Got-It" page 307 Lesson Check Blackline Master Part One chapter test
Part One: The Nature of Science Lesson Two	SEPS.2 Developing and using models and tools	How do scientists use tools?	Teacher's Manual, pages 308-313		"Got-It" page 313 Lesson Check Blackline Master Part One chapter test
Part One: The Nature of Science Lesson Three	SEPS.3 Constructing and performing investigations SEPS.4 Analyzing and interpreting data	How do scientists answer questions?	Teacher's Manual, pages 314-321	Scientific method Hypothesis Variables Evidence Conclusion	"Got-It" page 321 Lesson Check Blackline Master Part One chapter test

<p>Part One: The Nature of Science Lesson 4</p>	<p>SEPS.4 Analyzing and interpreting data</p> <p>SEPS.5 Using mathematics and computational thinking</p> <p>SEPS.6 Constructing explanations for science and designing solutions for engineering</p> <p>SEPS.7 Engaging in argument from evidence</p>	<p>How do scientists draw conclusions?</p>	<p>Teacher's Manual, pages 322-329</p> <p>Brainpop</p>	<p>Procedure Data Inference</p>	<p>"Got-It" page 329</p> <p>Inquiry page 330</p> <p>Lesson Check Blackline Master</p> <p>Part One chapter test</p>
<p>Part Two: Technology and Design Lesson 1 (2 Sessions)</p>	<p>No explicit standard available; this lesson provides background knowledge for Lesson 2</p>	<p>What is technology?</p> <p>How does technology affect our lives?</p>	<p>Teacher's Manual, pages 350-355</p> <p>Design a Hovercraft: page 344</p> <p>STEM pages 346-349</p> <p>Leveled Readers</p>	<p>Technology Transport Satellite</p>	<p>"Got-It" page 355</p> <p>Lesson Check Blackline Master</p> <p>Part Two chapter test</p>

<p>Part Two: Technology and Design Lesson 2</p>	<p>3-5.E.1 Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.</p> <p>3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>3-5.E.3 Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	<p>What is the design process?</p>	<p>Teacher’s Manual, pages 356-363</p> <p>Investigation page 364</p>	<p>Design process Model Prototype</p> <p>Lift Thrust Drag Friction</p>	<p>“Go-It” page 363</p> <p>Lesson Check Blackline Master</p> <p>Part Two chapter test</p> <p>Inquiry page 374</p> <p>Performance Based Assessment page 380</p> <p>Part Two chapter test</p>

Units Chapter Lesson	Indiana Standards	Key Questions	Resources/Activities	Vocabulary	Assessments
Unit One: Chapter One: Lesson One: Energy and Heat (2 Sessions)	4. PS.4 Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy. 4.PS.5 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	How does energy cause change?	Inquiry Lesson page 2 STEM activity pages 4-7 Teacher’s Manual, pages 8-15 Leveled Readers Brainpop: “Forms of Energy” Brainpop: “Kinetic Energy” Brainpop: “Potential Energy”	Energy Electrical energy Thermal energy Sound energy Light energy Kinetic energy Potential energy	“Got-It” page 15 Lesson Check Blackline Master Unit One, Chapter One Test
Unit One: Chapter One: Lesson Two: Sound	4. PS.4 Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.	What is sound energy?	Teacher’s Manual, pages 16-21 Music teacher Music equipment borrowed from the music room Brainpop, Jr.: “Sound” Brainpop: “Sound”	Sound Frequency Wavelength Pitch Volume Amplitude	“Got-It” page 16 Lesson Check Blackline Master Unit One, Chapter One Test

Unit One: Chapter One: Lesson Two: Light	4. PS.4 Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.	What is light energy?	Teacher's Manual, pages 22-27 Brainpop, Jr.: "Light" Brainpop: "Light"	Refraction Reflection Absorption	"Got-It" page 27 Lesson Check Blackline Master Unit One, Chapter One Test
Unit One: Chapter One: Lesson Three: Heat	4. PS.4 Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.	What is heat energy? How does energy cause change?	Teacher's Manual, pages 28-33 Brainpop: "Heat"	Conduction Convection Radiation	"Got-It" page 33 Lesson Check Blackline Master Unit One, Chapter One Test
Unit One: Chapter One: Culmination			Inquiry/Investigation pages 34-35 Vocabulary pages 37-38 Study Guide and Chapter Review pages 41-43		Unit One, Chapter One Test

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Units Chapter Lesson	Indiana Standards	Key Questions	Resources/Activities	Vocabulary	Assessments
Teacher generated lessons	4.PS.3 Investigate how multiple simple machines work together to perform everyday tasks.	<p>What are simple machines?</p> <p>What is work?</p> <p>How do simple machines make work easier?</p> <p>How do simple machines work together to create complex machines?</p>	<p>Idaho Public Television Video (basic information about all of the simple machines)</p> <p>Science Trek website from Idaho Public Television</p> <p>This page from Ducksters includes basic definitions of simple machines</p> <p>NeoK12 site</p> <p>Brainpop Jr.: “Simple Machines”</p> <p>Superteacher Worksheets</p> <p>Teachers Pay Teachers</p>	<p>Work</p> <p>Lever</p> <p>Pulley</p> <p>Wheel and Axle</p> <p>Wedge</p> <p>Inclined Plane</p> <p>Screw</p>	<p>Build a Rube Goldberg machine and identify the simple machines</p> <p>Identify the simple machines used to create common toys (Think: Legos and hot wheel or toy train tracks)</p>

<p>Unit One: Chapter Two: Lesson One: Motion (2 Sessions)</p>	<p>4.PS.1 Investigate transportation systems and devices that operate on or in land, water, air, and space and recognize the forces lift, drag, friction, thrust, and gravity that affect their motion.</p>	<p>What is motion? How do you measure motion?</p>	<p>Inquiry Lesson, pages 48-49 STEM activity, pages 50-53 Teacher's Manual, pages 54-61 Leveled Readers Brainpop, Jr.: "Pushes and Pulls"</p>	<p>Motion Reference Point Force Gravity</p>	<p>"Got-It" pages 61 Lesson Check Blackline Master Unit One, Chapter Two Test</p>
<p>Unit One: Chapter Two: Lesson Two: Speed</p>	<p>4.PS.1 Investigate transportation systems and devices that operate on or in land, water, air, and space and recognize the forces lift, drag, friction, thrust, and gravity that affect their motion. SEPS.5 Using mathematics and computational thinking</p>	<p>What is speed? How can motion be described and measured?</p>	<p>Teacher's Manual, pages 62-67 Brainpop: "Flight" Smithsonian National Air and Space Museum site Pieces of Learning publications; experimenting with lift, drag, thrust, and gravity</p>	<p>Speed Velocity Not addressed in book: Lift Drag Friction Thrust</p>	<p>"Got-It" page 67 Lesson Check Blackline Master Unit One, Chapter Two Test</p>

Unit One: Chapter Two: Culmination			Inquiry/Investigation, pages 68-69 Vocabulary, pages 71-72 Chapter Review, pages 73-75		Unit One, Chapter Two Test
Unit One: Chapter Three: Lesson One: Electricity (2 Sessions)	4.PS.5 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	How do electric charges flow in a circuit?	Inquiry Lesson, pages 80-81 STEM Activity, pages 82-85 Teacher's Manual, pages 86-91 Brainpop: "Electric Circuits"	Electric current Insulator Conductor Series circuit Parallel circuit	"Got-It" page 91 Lesson Check Blackline Master Unit One, Chapter Three test
Unit One: Chapter Three: Lesson Two: Changes in Energy	4.PS.5 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	How can energy change?	Teacher's Manual, pages 92-95 Mystery Science: "What if there were no electricity?"	Filament Friction Resistor	"Got-It" page 95 Lesson Check Blackline Master Unit One, Chapter Three test
Unit One: Chapter Three Culmination			Inquiry/Investigation page 96 Vocabulary, pages 99-100 Study Guides, pages 101-100		Performance Based Assessments, pages 106-111

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Units Chapter Lesson	Indiana Standards	Key Questions	Resources/Activities	Vocabulary	Assessments
Unit Two: Chapter 4: Lesson One: Classification (2 Sessions)	No explicit standard available; this lesson provides background knowledge for the rest of the chapter	What do living organisms need to survive? How are plants and animals classified?	Leveled Readers Inquiry, page 114 STEM Activity, pages 116-119 Teacher’s Manual, pages 120-127	Classify Vascular Vertebrates Invertebrates	“Got-It” page 127 Lesson Check Blackline Master Unit Two, Chapter 4 Test
Unit Two: Chapter 4: Lesson Two: Plant Structures and Reproduction	No explicit standard available; this lesson provides background knowledge for the rest of the chapter	What are the parts of a flower? How do plants reproduce?	Teacher’s Manual, pages 128-135 Brainpop: “Pollination” (Preview for appropriate content for your group) Mystery Science: “Why do plants grow flowers?” and “Why do plants give us fruit?”	Sepals Pistil Stamen Pollination Fertilization Germinate	“Got-It” page 135 Lesson Check Blackline Master Unit Two, Chapter 4 Test
Unit Two: Chapter 4: Lesson Three: Photosynthesis	No explicit standard available; this lesson provides background knowledge for the rest of the chapter	How do plants make food?	Teacher’s Manual, pages 136-141 Brainpop: “Photosynthesis”	Photosynthesis Chloroplast Chlorophyll	“Got-It” page 141 Lesson Check Blackline Master Unit Two, Chapter 4 Test

<p>Unit Two: Chapter 4: Lesson 4: Adaptations</p>	<p>4. LS.3 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction in a different ecosystem.</p>	<p>What are adaptations?</p>	<p>Teacher's Manual, pages 142-147</p> <p>Brainpop: "Camouflage"</p> <p>Mystery Science: "Plant Adaptations"</p>	<p>Adaptation Hibernation Environment</p>	<p>"Got-It" page 147</p> <p>Lesson Check Blackline Master</p> <p>Unit Two, Chapter 4 Test</p>
<p>Unit Two: Chapter 4: Lesson 5: Inherited Traits</p>	<p>4. LS.1 Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.</p>	<p>What plant and animal characteristics are inherited?</p>	<p>Teacher's Manual, pages 148-153</p> <p>Mystery Science: "Power of Flowers: Plant Life Cycle & Heredity"</p>	<p>Characteristics Inherit Advantage</p>	<p>"Got-It" page 153</p> <p>Lesson Check Blackline Master</p> <p>Unit Two, Chapter 4 Test</p>

Unit Two: Chapter 4: Lesson 6: Survival in the Environment	4. LS.2 Use evidence to support the explanation that a change in the environment may result in how well a plant or an animal will survive and reproduce, move to a new location, or die.	What do living organisms need to survive?	Teacher's Manual, pages 154-159	Stimulus Instinct Migration Protection Hibernation	"Got-It" page 159 Lesson Check Blackline Master Unit Two, Chapter 4 Test
Unit Two, Chapter 4 Culmination			Inquiry/Investigation, pages 160-161 Vocabulary cards, pages 163-168 Study Guides, pages 169-171		Unit Two, Chapter 4 Test Performance Based Assessments, pages 229a-229b
Unit Three: Chapter 5: Lesson 1: Ecosystems (2 sessions)	4. LS.3 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction in a different ecosystem.	What are ecosystems?	Leveled Readers Inquiry, page 176 STEM activity, pages 178-181 Teacher's Manual, pages 182-187 Brainpop: "Ecosystems"	Ecosystem Habitat Population Tundra Rain Forests Desert Grassland Wetland	"Got-It" page 187 Lesson Check Blackline Master Unit Three, Chapter 5 Test

<p>Unit Three: Chapter 5: Lesson 2: Inter-dependence</p>	<p>4. LS.2 Use evidence to support the explanation that a change in the environment may result in how well a plant or an animal will survive and reproduce, move to a new location, or die.</p>	<p>How do living things affect their environment?</p>	<p>Teacher's Manual, pages 188-193</p> <p>Mystery Science: "Web of Life: Ecosystems & the Food Web"</p>	<p>Competition Erosion Resource</p>	<p>"Got-It" page 193</p> <p>Lesson Check Blackline Master</p> <p>Unit Three, Chapter 5 Test</p>
<p>Unit Three: Chapter 5: Lesson 3: Natural Resources</p>	<p>4. ESS.2 Obtain and combine information to describe that energy and fuels are derived from natural resources and their use affects the environment.</p> <p>4. ESS.4 Develop solutions that could be implemented to reduce the impact of humans on the natural environment and the natural environment on humans.</p>	<p>What are natural resources?</p>	<p>Teacher's Manual, pages 194-199</p> <p>Brainpop: "Natural Resources"</p> <p>Brainpop: "Fossil Fuels"</p>	<p>Natural resources Renewable resources Non-renewable resources Fossil fuels</p>	<p>"Got-It" page 199</p> <p>Lesson Check Blackline Master</p> <p>Unit Three, Chapter 5 Test</p>

<p>Unit Three: Chapter 5: Lesson 4: Fossils</p>	<p>4. ESS.2 Obtain and combine information to describe that energy and fuels are derived from natural resources and their use affects the environment.</p>	<p>What are fossils?</p>	<p>Teacher's Manual, pages 200-205</p> <p>Brainpop: "Fossils"</p>	<p>Fossil Extinct Sediments Amber</p>	<p>"Got-It" page 205</p> <p>Lesson Check Blackline Master</p> <p>Unit Three, Chapter 5 Test</p>
<p>Unit Three: Chapter 5: Lesson 5: Reading the History</p>	<p>4. ESS.2 Obtain and combine information to describe that energy and fuels are derived from natural resources and their use affects the environment.</p> <p>SEPS.7 Engaging in argument from evidence</p>	<p>What can fossils tell us?</p> <p>How do scientists analyze and interpret data to learn about the past?</p>	<p>Teacher's Manual, pages 206-211</p> <p>Brainpop: "Fossils"</p> <p>Mystery Science: "Animals Through Time: Animal Survival & Heredity"</p>	<p>Paleontologist Fossil fuel Geologic time scale</p>	<p>"Got-It" page 211</p> <p>Lesson Check Blackline Master</p> <p>Unit Three, Chapter 5 Test</p>
<p>Unit Three: Chapter 5: Culmination</p>			<p>Inquiry/Investigation, pages 212-213</p> <p>Vocabulary cards, pages 215-218</p> <p>Study guides and review, pages 219-221</p>		<p>Unit Three, Chapter 5 Test</p> <p>Application, pages 224-229</p> <p>Performance Based Assessment, pages 229c-229d</p>

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Units Chapter Lesson	Indiana Standards	Key Questions	Resources/Activities	Vocabulary	Assessments
Teacher generated lesson	4.ESS.1 Investigate how the moon appears to move through the sky and it changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar and lunar eclipses.	How does the position of the sun, the Earth, and moon cause change in the moon's appearances?	Bill Nye video Brainpop, Jr.: "Moon" Brainpop: "Moon Phases" Mystery Science: "Why does the moon change shape?"	Full moon New moon Phases of the moon Quarter moon Waning moon Waxing moon	
Unit Four: Chapter 6: Lesson One: Earth's Resources (2 Sessions)	No explicit standard available; this lesson provides background knowledge for the rest of the chapter	How are minerals classified?	Leveled Readers Inquiry, page 232-233 STEM Activity, pages 234-237 Teacher's Manual, pages 238-243 Brainpop, Jr.: "Rocks and Minerals"	Minerals Luster Hardness Streak Cleavage	"Got-It" page 243 Lesson Check Blackline Master Unit Four, Chapter 6 Test

Unit Four: Chapter 6: Lesson Two: Rock Classification	4. ESS.3 Describe how geological forces change the shape of the land suddenly and over time.	How are rocks classified?	Teacher's Manual, pages 244-253 Brainpop: "Rock Cycle" Wonderopolis: "Do Rocks Dissolve?" Mystery Science: The Birth of Rocks	Igneous Metamorphic Sedimentary Magma Sediment Rock cycle	"Got-It" page 253 Lesson Check Blackline Master Unit Four, Chapter 6 Test
Unit Four: Chapter 6: Lesson Three: Weathering and Erosion	4. ESS.3 Describe how geological forces change the shape of the land suddenly and over time.	How do weathering, erosion, and deposition change the face of the earth?	Teacher's Manual, pages 254-259 Brainpop: "Weathering" Brainpop: "Erosion"	Landform Weathering Erosion Deposition	"Got-It" page 259 Lesson Check Blackline Master Unit Four, Chapter 6 Test
Unit Four: Chapter 6: Lesson Four: Rapid Changes to the Surface of the Earth	4. ESS.3 Describe how geological forces change the shape of the land suddenly and over time. SEPS.8 Obtaining, evaluating, and communicating information	What events cause rapid change to the surface of the earth? How do these events cause change to the surface of the earth?	Teacher's Manual, pages 260-265 Brainpop: "Plate Tectonics" (A bit complex, but doable) Brainpop: "Volcanoes" Brainpop: "Earthquakes" Mystery Science: "The Birth of Rocks"	Tectonic plates Fault Volcano Earthquake Landslide Drought Flood	"Got-It" page 265 Lesson Check Blackline Master Unit Four, Chapter 6 Test
Unit Four: Chapter 6: Lesson Five: Water on Earth	4. ESS.3 Describe how geological forces change the shape of the land suddenly and over time.	Where is Earth's water?	Teacher's Manual, pages 266-271 Mystery Science: "Watery Planet: Water Cycle & Earth's Systems"	Surface water Groundwater Glacier River	"Got-It" page 271 Lesson Check Blackline Master Unit Four, Chapter 6 Test

Unit Four: Chapter 6: Lesson 6: Water Cycle	4. ESS.3 Describe how geological forces change the shape of the land suddenly and over time.	What is the water cycle?	Teacher's Manual, pages 272-277 Brainpop: "Water Cycle"	Precipitation Evaporation Condensation Storage Water cycle Drought Flood	"Got-It" page 277 Lesson Check Blackline Master Unit Four, Chapter 6 Test
Unit Four: Chapter 6: Culmination			Inquiry/Investigate, pages 278-279 Vocabulary cards, pages 281-284 Review and Study Guides, pages 285-287		Application, pages 290-293 Performance Based Assessment, pages 294-295